

POLYNOMIAL SAMPLING, QUADRATURE, APPROXIMATION, AND APPLICATIONS TO POLYNOMIAL OPTIMIZATION

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ABSTRACT. The study of multivariate polynomials has attracted new attention in the last decade. This is the result of various factors: on one hand the approach of Calvi and Levenberg, based on certain sampling inequalities, stimulated a series of works that concerns the construction of good sampling sets for polynomials, on the other hand some robust algorithms for scientific computing with polynomials has been developed. Lastly (also as a consequence of this scenario) a part of the numerical analysis and approximation theory communities get more in touch with complex analysts working on complex Monge Ampere operator and related topics. This synergy produced new heuristics and new applications for the first group and new questions for the second one.

In this talk we survey some of these recent developments, with emphasis on the application to polynomial optimization.

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